

***Macrobrachium cationium*, a new troglobitic
shrimp from the Cayo District of Belize
(Crustacea: Decapoda: Palaemonidae)**

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Abstract.—A new troglobitic shrimp, *Macrobrachium cationium*, is described from the Vaca Plateau, Cayo District of Belize. It is the third albinistic member of the genus known to occur along the Gulf of Mexico-Caribbean versant of Middle America. It may be distinguished from the Oaxacan *M. villalobosi* Hobbs by the eye which is more pigmented and lacks an apical cleft, and by the shorter, often slightly upturned rostrum which does not reach the distal extremity of the antennal scale. It differs from the Tabascan *M. acherontium* in possessing a more attenuate (less vaulted) rostrum, and from both in that usually there are more than two ventral rostral teeth, and fewer subapical spines on the appendix masculina.

The new shrimp described herein is the third albinistic member of the genus *Macrobrachium* known to occur in caves on the Gulf of Mexico-Caribbean versant of Middle America (Botosaneanu 1986). *Macrobrachium villalobosi* Hobbs (1973) has been reported from a single locality, Cueva del Nacimiento del Río San Antonio, 10 km SSW of Acatán, Oaxaca, Mexico, and *M. acherontium* Holthuis (1977) from two caves in Tabasco, Mexico. Specimens of the new troglobite have been collected in two caves located approximately 46 km apart on the Vaca Plateau in the Cayo District of Belize close to Guatemala.

Macrobrachium cationium, new species

Description.—Rostrum (Fig. 1a, d) moderately high, weakly arched, and slightly deflected or upturned anteriorly, tip not reaching distal extremity of antennal scale; dorsal margin with 6 to 9 teeth, as many as 3 bispinous (8 in holotype of which 3 bispi-

nous), and 1 or 2 epigastric; ventral margin with 2 to 5 teeth.

Carapace (Fig. 1a) with antennal spine arising slightly posterior to ventral part of orbital margin and hepatic spine almost directly ventral to first epigastric tooth. Branchiocardiac groove prominent.

Abdomen (Fig. 1a) smooth, pleura of fifth abdominal somite with acute posteroventral angle, more anterior pleura rounded posteroventrally. Sixth somite 1.5 times as long as fifth, and telson 1.2 times longer than sixth; dorsal surface of telson (Fig. 1j, o) with anterior pair of spines situated at base of posterior third and posterior pair at about base of posterior sixth, slightly posterior to midway between anterior pair and median apex of telson; posterior margin of telson sharply contracted, forming broadly acute tip, and bearing 2 pairs of spines ventral to margin, more mesial pair decidedly overreaching apex of telson, lateral pair falling short of apex; (holotype with row of 8 plumose setae between mesial pair of spines

and single simple submarginal seta dorsally).

Eyes (Fig. 1a, d) moderately large, rounded distally and with apical black to purplish pigment spot; cornea over pigmented area lacking facets.

Antennule (Fig. 1a, d) with proximal podomere of peduncle longer than combined length of distal 2 podomeres, these subequal in length, and distal podomere falling short of base of lateral spine on antennal scale; distolateral spine on basal podomere reaching slightly beyond midlength of penultimate podomere; holotype with lateral long flagellum about 5 times length of postorbital length of carapace, mesial flagellum about 3 times as long. Antenna (Fig. 1a, d, l) with peduncle as illustrated, basal segment with ventrolateral spine, flagellum about 7.3 times as long as postorbital carapace length. Antennal scale 2.5 times as long as broad, with lateral margin almost straight.

Gnathal appendages (Fig. 1b, e, h, i, k, m) as figured. Third maxilliped reaching slightly beyond midlength of antennal scale.

First pereopod (Fig. 1a) overreaching antennal scale by length of dactyl, latter subequal in length to mesial margin of palm of chela; carpus about twice length of chela and slightly shorter than merus. Second pereopod (Fig. 1a, n) overreaching antennal scale by only slightly more than length of chela; latter with fingers slightly longer than smooth palm; opposable margin of fixed finger with 1 very small corneous tubercle near base, otherwise fingers lacking tubercles, but both fingers with scattered fine setae and subapical clusters of curved stiff ones; carpus 1.2 times as long as either propodus or merus, and merus 1.4 times longer than ischium. Third pereopod overreaching antennal scale by propodus and $\frac{1}{3}$ length of carpus; latter almost half as long as merus, and merus 2.5 times as long as ischium. Fourth pereopod overreaching antennal scale by dactyl and slightly less than half length of propodus; propodus approximately 2.7 times length of dactyl; carpus about half as

long as merus, and latter almost 2.5 times as long as ischium. Fifth pereopod overreaching antennal scale by dactyl and $\frac{1}{4}$ length of propodus; propodus almost 5 times length of dactyl and 1.7 times length of carpus, latter little less than $\frac{2}{3}$ length of merus; merus 2.6 times length of ischium.

First pleopod (Fig. 1c) with exopodite 2.2 times as long as endopodite. Second pleopod (Fig. 1f) with exopodite 1.2 times length of endopodite and latter with appendix masculina (Fig. 1f, g) reaching distinctly beyond its midlength. Lateral ramus of uropod (Fig. 1o) with straight lateral margin bearing fixed spine and longer, slenderer, movable one at its mesial base.

Branchial formula typical of that of many, if not most, other members of *Macrobrachium*: 5 pleurobranchs corresponding to pereopods, 2 arthrobranchs at base of third maxilliped, podobranch on coxa of second maxilliped, and epipodites on second maxilla and first maxilliped.

Size.—Carapace length of male holotype 9.9 mm; that of 12 females, none of which ovigerous, ranging from 8.8 to 14.4 mm.

Color.—Lacking pigment except for eye spot which purplish to black.

Type locality.—Lake in Actun Chapat (cave), Cayo District, Belize. This cave is located on the northern end of the Vaca Plateau and although it has not been fully explored it is estimated to be about 2 km in length. Shrimp were found in the lake passage, apparently a perched overflow route with a series of small lakes extending more than 150 m. The shrimp were numerous on the silt-covered substrate of the lakes which were as deep as 6 m. The troglobitic crab, *Typhlopseudothelphusa acanthochela* Hobbs, 1986, occurred in small numbers and the catfish with reduced eyes, *Rhamdia laticauda typhla* Greenfield, Greenfield, & Woods, were fairly abundant. Bats were roosting over the lakes and probably were insectivorous *Natalus* sp. and *Mormoops* sp. and frugivorous *Corollia* sp. and *Glossos-*

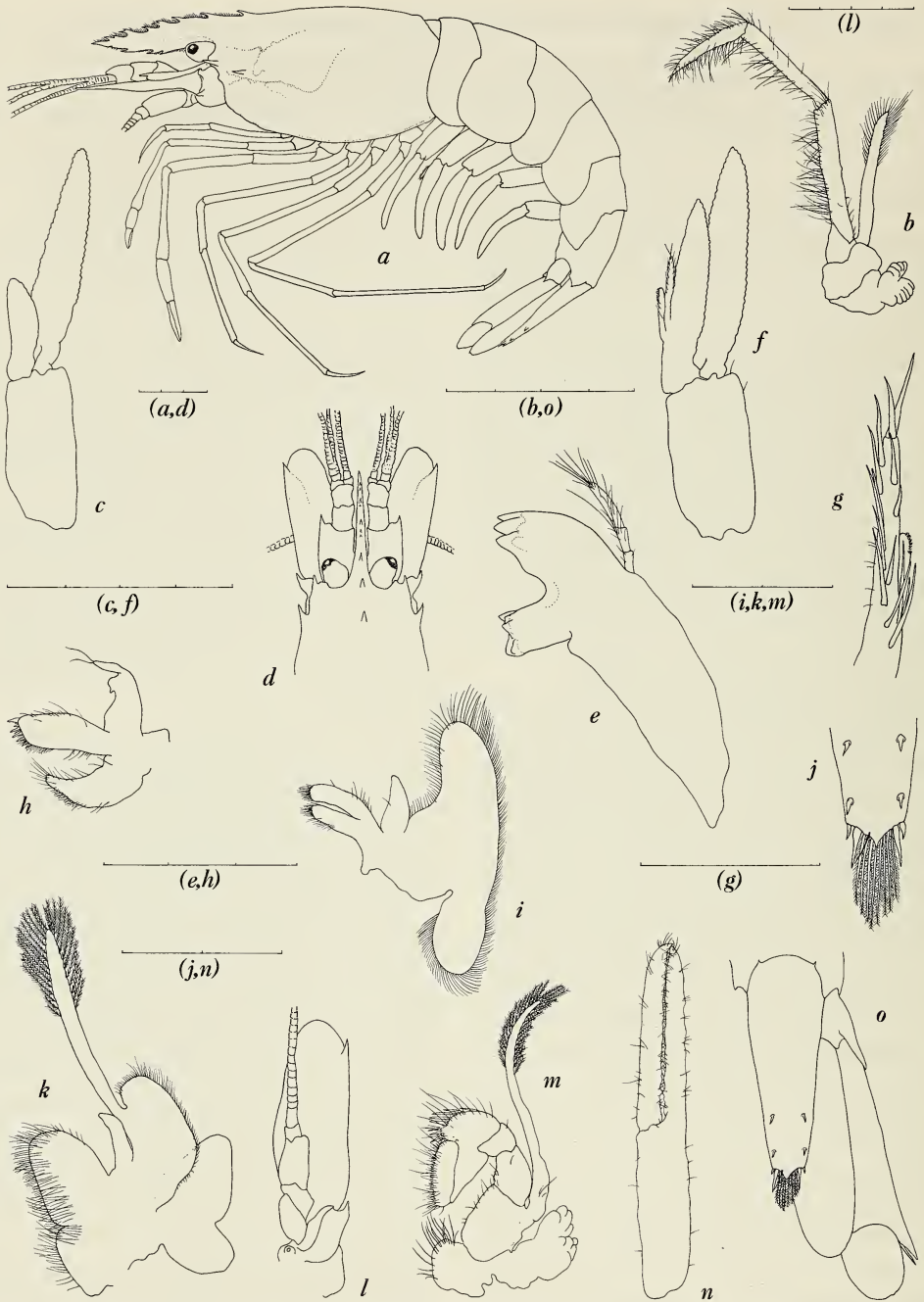


Fig. 1. *Macrobrachium cationium*, new species (all appendages from left side of holotype except c and h from female paratype from type locality): a, Lateral view; b, Third maxilliped; c, f, First pleopods; d, Dorsal view of anterior region of carapace, including cephalic appendages; e, Mandible; g, Appendices masculina and interna; h, First maxilla; i, Second maxilla; j, Dorsal view of caudal end of telson; k, First maxilliped; l, Ventral view of basal part of antenna; m, Second maxilliped; n, Chela of second pereiopod; o, Dorsal view of telson and right uropod. (Scales in mm.)

phaga sp. Temperature of the lake water in December 1991 was 25°C.

Specimens examined.—In addition to 1 ♂ and 9 ♀ from the type locality (Actun Chapat, 5 Dec 1992, R. Foster & W. R. Elliott, coll.), specimens were examined from Tunkul Cave, Chiquibal System, Cayo District, Belize, 1 ♀, 24 Mar 1986, D. Coons, coll. and from "Chiquibal System," Cayo District, Belize, 2 ♀, 8 Mar 1986, D. Coons, coll. (This cave is located approximately 46 km south of Actun Chapat on the south end of the Vaca Plateau near Guatemala.)

Disposition of types.—The holotype (USNM 260328) and 10 of the paratypic females are deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. A paratypic female is in the collection of the Texas Memorial Museum, Austin, and another in the Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands.

Relationships.—*Macrobrachium catonium* is closely related to the two Mexican troglobitic shrimps assigned to the genus, *M. villalobosi* and *M. acherontium*. The three are markedly similar suggesting common ancestry. The apically notched eyes and long (reaching to or beyond the distal end of the antennal scale), slender, straight rostrum of *M. villalobosi* sets it apart from the other two, and the comparatively slender (nearly straight rather than with a strongly convex ventral margin) rostrum with usually more than two ventral teeth in *M. catonium* distinguishes it from *M. acherontium*. In addition, there are fewer subapical setae on the appendix masculina of *M. catonium* than in the other two species. Holthuis (1977: 191) reported the presence of 5 pleuro-

branches but no other gills, exopods, or epipods in *M. acherontium* whereas *M. catonium* possesses 2 arthrobranches at the base of the third maxilliped, and epipodites on the second and first maxillipeds.

Etymology.—*Catonium* (L.), the lower world, noting the subterranean habitat of this shrimp.

Acknowledgments

Thanks are extended to T. Miller for locating and sending us the misplaced shrimp collected from the Chiquibal Cave system in 1986, and to D. Coons who collected three of the specimens. We are also grateful to R. Foster and W. R. Elliott who collected the shrimp from the type locality, and to the latter who provided us with the information recorded in the description of the type locality. For their critical review of the manuscript appreciation is extended to C. W. Hart, Jr., B. F. Kensley, and A. B. Williams.

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